



A STUDY OF BANANA PRODUCTION IN BANGLADESH: AREA, YIELD AND MAJOR CONSTRAINTS

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ABSTRACT

In Bangladesh, the total banana cultivated area in the year 2006-07 was 145280 acres (58818 ha) and it was decreased to 130589 acres (52870 ha) in the year 2010-11. The total production was decreased 1004520 tons to 800840 tons due to decreasing cultivated area. The yield was decreased during the mentioned period from 6.9 t acre⁻¹ (17 tha⁻¹) to 6.13 t acre⁻¹ (15.1 tha⁻¹). The highest banana cultivated area was observed in Tangail region considering 23 regions from 2006-07 to 2010-11. The total area for banana production under Tangail region gradually decreased from 26260 acres (10631 ha) to 16863 acres (6827 ha). The yield of banana in Tangail region was 8.05 t acre⁻¹ (19.9 tha⁻¹) in 2010-11. The minimum cultivated area of banana in 2010-11 was observed in Pabna region. Considering the year round availability, nutritional value, uses, prices, popularity and production, banana is considered the number one fruit in Bangladesh. Biological constraints such as insect-pest-diseases are cause serious damage and yield loss of banana in Bangladesh.

Keywords: banana, production, area, yield, constraints, Bangladesh.

INTRODUCTION

Banana is the best-known tropical fruit. It is one of the economically important fruit crops grown in Bangladesh in both homestead and commercial farms [1]. *Musa* spp., banana and plantain, constitute the fourth most important staple food commodity of the world, after rice, wheat and maize. In Asian and Pacific regions, banana has great socio-economic significance. The United Nations Food and Agriculture Organization [2] rank bananas as the world's fourth most important crop after the major cereals. Bangladesh is an agricultural country. More than 80% people directly or indirectly depends on agriculture. About 19.29% of GDP is derived from agriculture in the year 2011-12 [3]. Bangladesh ranks 14th among the top 20 banana producing countries in the world. The country produces nearly 1.00 million tons of bananas annually. It is also a nutritious fruit crop in the world and grown in many tropical areas where they are used both as a staple food and dietary supplements [4]. The total per capita consumption in Bangladesh is about 4.7 kg. This is very much lower than that consumed by Europe especially Belgium (26.7 kg), Sweden (16.7 kg) and Germany (14.5 kg) while USA consumed 13.1 kg and UK at 10.5 kg [5]. Banana is one of the most important food and cash crop in Bangladesh and grown around the year in the country as a commercial purpose and homestead area for local consumption. In addition, banana stood first position among the fruits producing in the country and supplies 42% of the total fruit requirements in the country and also its financial return as a crop is higher compared to other fruits and field crops [6]. A number of dessert banana varieties in Bangladesh, but their performance is not equally well in all regions due to difference in varietal adaptability and microclimatic variation [7]. The average food intake of a Bangladeshi is deficient in calorie, vitamins and minerals. Banana, the cheapest fruit of Bangladesh, can improve this situation to a great extent. Banana is a very versatile crop. Banana is a rich source of calorie, as well as most of the vitamins essential for human

nutrition. Bananas are rich in carbohydrate, potassium and vitamins, including A, C, and B6. They are a good source of dietary fibre and are fat-free. Banana is often the first solid food fed to infant. Ripe banana mixed with rice and milk is the traditional dish for Bangladeshi. Plantain is a good vegetable available throughout the year has a great demand in the urban areas during the lean period of vegetables from May to October. Dessert bananas are eaten as fresh fruit throughout the year. Bananas have several medicinal uses. In spite of its unique position among the fruit crops of Bangladesh, limited studies have been regarding area, production, yield and constraints of banana. Under different agro-ecological zone of Bangladesh. Thus, the potential for expansion of banana cultivation and increase yield per hectare is needed in the country. The present study has provided an assessment of area, production, yield and constraints of banana in Bangladesh

METHODOLOGY

In this study, the data of cultivated area, production and yield of banana data were collected from Bangladesh Bureau of Statistics [8], Food and Agriculture Organization [2] and different related scientific articles. Interviews with banana farmers, wholesalers and retailers were conducted purposively during January 2012 to July 2013 in Rangpur, Bogra, Khulna, Tangail and Gazipur district.

RESULTS AND DISCUSSIONS

Area, production and yield of banana

Generally, banana plants are found throughout the country in most of the rural homesteads. Major Districts of cultivated Banana are Narsingdi, Gazipur, Tangail, Rangpur, Bogra, Natore, Pabna, Noakhali, Faridpur, Khulna in our country. Districts of wild grown Banana are Sylhet, Moulvibazar, Netrokona, Rangamati, Khagrachhari, Bandarban. In Bangladesh, the total banana



cultivated area in the year 2006-07 was 145280 acres (58818 ha) and it was decreased to 130589 acres (52870 ha) in the year 2010-11 and total production was decreased 1004520 tons to 800840 tons due to decreasing cultivated area (Figure-1 and Figure-2). Yield was decreased during those days from 6.9 t acre^{-1} (17 tha^{-1}) to 6.13 t acre^{-1} (15.1 tha^{-1}). Last five years data showed that total area and production of banana gradually decreased from 2006-07 to 2010-11. The highest banana cultivated area was observed in Tangail region from 2006-07 to 2010-11 but total area gradually decreased from 26260 acres (10631 ha) to 16863 acres (6827 ha). Average yield of banana in Tangail region was 8.05 t acre^{-1} (19.9 tha^{-1}) in 2010-11. The minimum cultivated area (1056 acres) in 2010-11 of banana was obtained under Pabna region (Table-1). Whereas, In

Bangladesh, total banana production in year the 1999-2001 was about 0.580 million tons but it increased to 0.654 million tons in the year 2003 [2]. In the year 1975 - 76, the total banana cultivated area was 37,200 ha and it was increased to 49,280 ha in the year 2003 - 04. Total production was increased 0.5691 to 0.7065 million tons due to increasing cultivated area but yield was decreased during those days from 15.07 tha^{-1} to 14.33 tha^{-1} due to constraints of banana cultivation [9, 10]. Considering the year round availability, popularity and production, banana is considered the number one fruit in Bangladesh. The average yield of banana is 14 tha^{-1} , which is lower compared to other banana-producing countries in the world. However, in commercial orchard, yield is not less than 30 tha^{-1} [11].

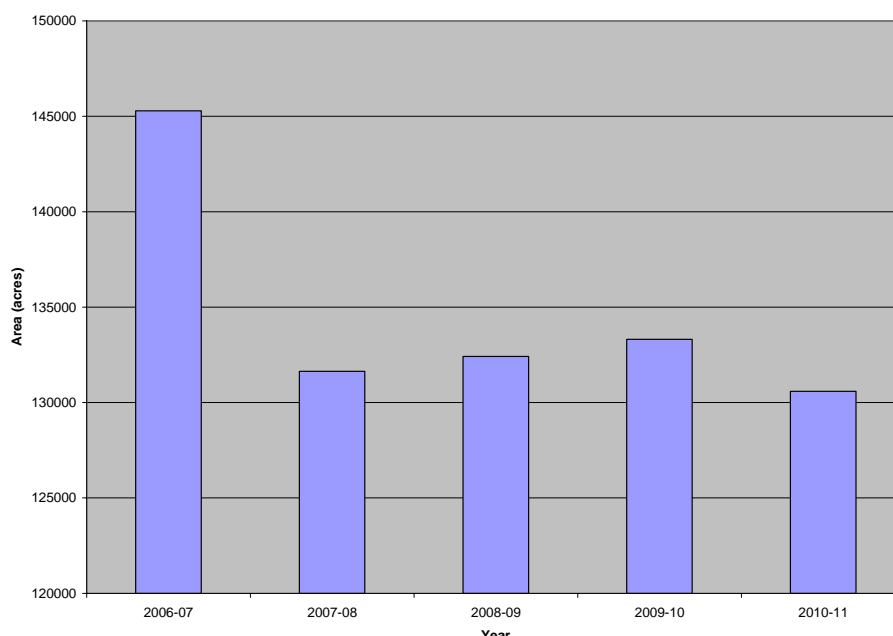


Figure-1. Banana production area in Bangladesh (2006-07 to 2010-11).

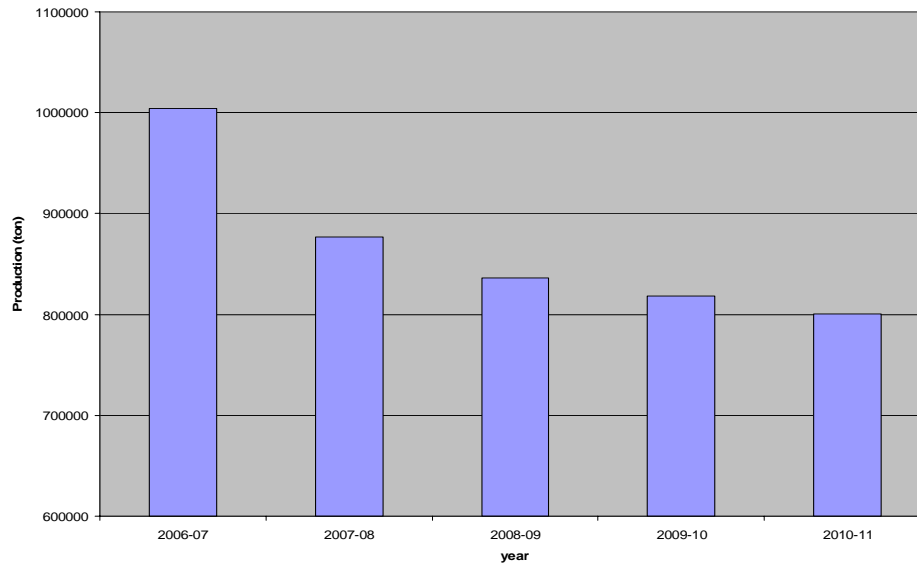


Figure-2. Banana production in Bangladesh (2006-07 to 2010-11).

Table-1. Area (acres) and production (metric tons) of banana by region, 2006-07 to 2010-11.

Regions	2006-07		2007-08		2008-09		2009-10		2010-11	
	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.
Bandarban	3545	23565	3120	18843	3187	18701	3201	17846	3449	17870
Chittagong	4640	14505	3334	15427	3479	16010	3499	16011	3596	16771
Comilla	2420	10720	2369	15357	2177	13890	2058	10813	2087	11259
Khagrachhari	1025	10435	1355	13065	3427	10366	3775	10278	3855	10458
Noakhali	4845	18225	4545	18175	4648	17921	4738	18193	4700	18020
Rangamati	7900	37310	8590	40459	9110	44562	9305	40874	9416	44249
Sylhet	1350	2850	1425	2854	1453	2872	1447	2691	1456	2598
Dhaka	6550	53120	6184	38126	6250	42851	6285	43146	6148	44336
Faridpur	4405	28765	4789	37737	4862	39030	5881	42946	5838	42117
Jamalpur	2510	14045	2506	13998	2441	13639	2459	13780	2429	13561
Kishoregan	2235	14930	2261	15831	2243	15747	2220	14950	2193	14802
Mymensingh	5745	21685	5176	17078	5689	21413	5871	24003	5394	20854
Tangail	26260	228070	22399	186851	20496	170088	18226	152128	16863	135829
Barisal	15100	70305	12890	34420	15243	33577	16413	38977	16566	35876
Jessore	12355	109220	11663	68723	11995	60855	12193	63155	11375	55098
Khulna	8405	39125	6909	34765	4323	29265	4315	29185	4031	25345
Kushtia	10170	136890	9867	129964	8857	108861	8483	102800	8262	103166
Patuakhali	1765	8350	1638	7851	1609	7071	1615	7086	1520	7480
Bogra	4030	30205	3158	23447	2703	20393	2579	19549	2546	18481
Dinajpur	3830	29060	4042	30814	4032	31704	4234	30483	4360	35120
Pabna	1550	7030	945	8040	957	7530	1039	8578	1056	9030
Rajshahi	7445	55875	6069	55862	5681	41313	5741	42523	5702	47131
Rangpur	7200	40235	6402	49431	7552	68524	7728	68259	7747	71389
Bangladesh	145280	1004520	131636	877118	132414	836183	133305	818254	130589	800840

Source: Bangladesh Bureau of Statistics (2011).



Major constraints of banana production in Bangladesh

There are several constraints affecting banana production in the country. Major causes are:

- a) **Climatic factors:** Banana is mainly tropical crop and 27°C temperature is optimum for normal growth and development. If temperature rose above 38°C the growth and development stopped and if temperature fall down to below 10°C then crop period extended and reduced the bunch weight. Draught, water logging condition, in adequate sun light also cause crop damage, and yield loss. At present, no non-biological resistant variety developed yet although in Bangladesh. Bangladesh enjoys sub-tropical monsoon climate with temperature ranging from as low as 4°C in winter to as high as 42°C in summer with an average temperature of 27°C. July is the hottest month while January is the coldest. Cold waves are frequent in winter. Low temperature for about two months causes injury to banana, particularly in the northern part of the country [11].
- b) **Biological constraints:** such as insect-pest-diseases are also cause serious damage and yield loss of banana.

Diseases

Conventionally protection against banana diseases may account for more than 40% of the total production cost and the farmers without good access to chemicals have to cope with yield declines of 30% or more [12].

- a) The most damaging of the fungal disease is panama disease or Fusarium wilt caused by *Fusarium oxysporum* f. sp. *cubense* (Foc). Infection by this fungus will result in yellowing and wilting of the leaves, which eventually turn brown, the leaves will dry up and hang from the plant and eventually the plant dies. Most of our cultivars are more or less susceptible to this disease. Among the cultivars, Sabri (AAB) is highly susceptible to this disease. *Ralstonia solanacearum* (*Pseudomonas solanacearum*) causes Moko disease is similar to Fusarium wilt also resulting yield loss, which not very often have seen this disease in the country. At present, no resistant variety developed against this disease in the country and abroad and chemical control is not available.
- b) Foliage of banana is susceptible to sigatoka leaf spots. *Mycosphaerella fijiensis* causes black sigatoka and *Mycosphaerella musicola* causes yellow sigatoka disease is considered as the most serious disease of banana resulting in yield loss. In Bangladesh, Amritasagar (AAA) is susceptible to this disease.
- c) Many plant parasitic nematodes were associated with banana plants in the world. The most common nematodes are *Meloidogyne* spp., *Rotylenchulus reniformis*, *Helicotylenchus dihystra* and *Radopholus similis*. Those are reported to be the most damaging in banana producing countries [13]. In Bangladesh *Radopholus similis* is very common and our most of

the banana and plantain cultivars are affected by this nematode [14].

- d) There are a number of virus diseases of economic importance affecting banana production worldwide. *Banana bunchy top virus* (BBTV) is reported to be affected by some of our cultivar. Aphid transmits the virus. Bananas after harvest can be infected by anthracnose, crown rot; fruit rot and neck rot [15]. In Bangladesh, more or less we are having those diseases in bananas. At present against those diseases has the precaution measure and chemical control.

Insects

Banana leaf and fruit beetle and pseudo stem borer causing yield loss and reduced market value. In ensuring high quality banana for the consumers, post-harvest diseases must be controlled to prevent rotting and losses during handling and storage.

Marketing problems

Usually, banana passes two or three hands before it reaches the consumer. Small farmers usually sell their produce to middlemen or collectors in the village, who subsequently sell the same to wholesalers. Retailers and hotels/restaurants will then obtain bananas from the wholesalers. Finally, fruits are sold or served to consumers. Sometimes, retailers collect banana directly from the farmers and sell them at the roadside fruit stalls or markets. As a result, farmers are deprived of their actual price. This also reported by Islam and hoque [11]. Banana production provides suitable options for subsistence and income generation in Bangladesh. It is a commercial fruit, but in context of Bangladesh, it is grown in limited area commercially. Inadequate marketing system in this sector affect the income of the producers and its trading which also limit the expansion of banana production in our country. Profit for producer, wholesaler and retailer in banana production were Tk. 55002.8 per Hectare, Tk. 59.08 per Chari, and Tk. 122.67 per Chari respectively and benefit cost ratio for producers, wholesalers and retailers were 1.40, 1.30 and 1.41, respectively [16].

Export status: Banana produced in the country is consumed in the domestic market. The export markets have their standards and to achieve these, efforts have to be made to produce quality fruits. A small quantity of banana is exported to the Middle-East and European country countries. Although bananas are important export commodities of some developing countries in Africa, Latin America and the Asia, unfortunately Bangladesh is not an exporting country and bananas are consumed locally.

Post harvest operations

Transportation: cycles, tricycles, boats and shoulder carrier transport Bananas to the nearby markets usually. Trucks are used for distant city markets. Therefore, about 20-30% fruits are damaged due to heavy



pressure of the bunches and rough handling during loading and unloading [11].

Ripening: Natural ripening of banana is done for home consumption only. Heat treatment is the common method for ripening banana in commercial scale. Heating is done either by a candle or stove or burning rice husk to banana covered with the polyethylene film or in a closed room for 6-20 hours, depending on the season and variety. In this system, the firmness or texture of banana is damaged partially due to high temperature created inside the polyethylene cover or closed room. Even the heating period is longer and no cooling system after heat treatment. Fans are occasionally used to cool down the temperature. About 10-15%, bananas are damaged within a day due to overheating. Fruit colour also becomes fate. Some businessmen also use ethrel to hasten ripening but not in proper dose and in scientific way. They usually spray ethrel overall bunch before loading truck for shipment to distant market. Sometimes immature bunches were harvested especially during higher market price. No processing industry for banana is developed in the country [11].

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